[0016] **FIG. 2** is an exemplary block diagram illustrating a target computer-readable medium storing target software.

[0017] **FIG. 3** is an exemplary block diagram illustrating the driver software components of the computer communicating with target software.

[0018] **FIG. 4** is an exemplary flow chart illustrating operation of the driver software components.

[0019] **FIG. 5** is a block diagram illustrating an exemplary computer-readable medium storing a queue.

[0020] **FIG. 6** is a block diagram illustrating the exemplary elements of software for manipulation of offline mass storage device drivers.

[0021] **FIG. 7** is a block diagram illustrating one example of a suitable computing system environment in which the invention may be implemented.

[0022] Corresponding reference characters indicate corresponding parts throughout the drawings.

DETAILED DESCRIPTION OF THE INVENTION

[0023] The invention provides software for manipulation of offline target software in a scenario such as illustrated in **FIG. 1**. In particular, the invention software allows for manipulation by a computer of target software stored on one or more target computer-readable media when an operating system associated with the target software is not executing or is otherwise offline. Executing an operating system or an application program includes loading the machine code of the operating system or the application program into memory and then performing instructions in accordance with the machine code. In one embodiment, a server stores one or more images of target software that are offline. The target software has an online state and an offline state corresponding to the states of an operating system associated with the target software in which the operating system is running and not running, respectively. That is, the offline manipulation of the invention relates to manipulating the target software when an operating system associated with the target software is not running or executing. The online state and the offline state tend to be mutually exclusive. If the target software includes an operating system, the target software is online when the operating system is executing and offline when the operating system is not executing. If the target software includes an application program, the target software is online when the application program is executing and offline when the application program is not executing. Further examples of manipulation of offline software are described with respect to **FIG. 1** below.

[0024] The system of the invention includes a driver executing on the computer to provide access to the target software (e.g., via the data communication system). The driver includes one or more redirect components for manipulating the target software when the target software is offline. The manipulating occurs in response to at least one command received from a user. Manipulation includes, but is not limited to, modifying files by adding, deleting, or editing files or system settings (e.g., registry keys).

[0025] The invention differs from other systems in various ways. For example, other systems provide for redirecting application programming interface calls in a virtual memory system. Similarly, other systems include computer systems that automatically provide some of their capabilities to a main computer without powering on to facilitate configuring such systems in their shipping packages. However, all the other systems execute the operating system associated with the target software. In contrast, the invention provides a system for manipulation of software without executing an operating system associated with the software as illustrated in **FIG. 1**.

[0026] The invention software facilitates the user selection of configuration options prior to installing a complete software image or other representation or state of a file or file system. The result is a fast installation and configuration of a software product with the desired features in a minimal amount of time. In addition, with the invention software, any online action can be redirected to be performed in an offline manner. Such actions include, but are not limited to, adding services (to the operating system and to any application programs), adding patches or fixes to software, adding hardware support (e.g., drivers), adding or removing functionality or entire application programs. Further, additional components can be added to offline images such as SKU and language components.

[0027] In one embodiment, re-direction is not specified for an action. For example, a software component may specify that an action is to be performed in the context of the installed, executing operating system to which the software component will be added. In such an embodiment, a manifest for the software component (e.g., service, patch, or application program) provides information relating to the action. Offline updates are performed to allow for the action to be performed when the operating system is installed and executing (i.e., performed in an online manner).

[0028] The functionality illustrated in FIGS. **1-6** may be accessed by the user via a graphical user interface such as user interface **602**.

[0029] Referring first to **FIG. 1**, an exemplary block diagram illustrates a computer **102** connected to a server **104**. The server **104** includes one or more target computer-readable media **108** storing target software **110** that is offline. By way of example and not limitation, computer-readable media comprise computer storage media and communication media as described with reference to **FIG. 7**. In operation, the computer **102** responds to commands received from a user and manipulates the target software **110** stored on the server **104**.

[0030] In one embodiment, the computer **102** and server **104** (or the target software **110**) are connected via a data communication system such as network **106**. The data communication system includes, but is not limited to, networked connections as well as direct connections such as serial, parallel, infrared, cellular, or other wired or wireless connection, or any other network such as described with reference to **FIG. 7**. For example, an operating system associated with the computer **102** is executing while the server **104** such as a file server simply provides access to the target software **110**. The target software **110** may include an installed operating system. The operating system included or otherwise associated with the target software **110** is not executing. The computer **102** accesses the target computer-readable media **108** storing the target software **110** to make modifications to the target software **110** that is offline. The